VERTEBRATE FAUNA OF CANNABULLEN PLATEAU: A MID-ALTITUDE RAINFOREST IN THE AUSTRALIAN WET TROPICS

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Williams, S.E., Vernes, K. & Coughlin, J. 1999 06 30: Vertebrate fauna of Cannabullen Plateau: a mid-altitude rainforest in the Australian wet tropics. *Memoirs of the Queensland Museum* **43**(2): 849-858. Brisbane. ISSN 0079-8835.

This paper reports on a vertebrate fauna survey undertaken at the Cannabullen Section of Tully Gorge National Park in the north Queensland Wet Tropics. A team of 6 biologists surveyed the plateau and adjacent Cochable Creek over 20 days in November 1993 using a combination of standardised methods including mammal trapping, active reptile searches, spotlighting and bird censuses. Additional miscellaneous observations were also included. Ninety-six species of vertebrate were detected (12 mammals, 52 birds, 22 reptiles and 10 amphibians) of which 29 were endemic to the Wet Tropics Region. Thirty-nine species were considered to be significant with respect to the conservation of the World Heritage values of the region, with 8 of these recognised as being rare or endangered in Queensland. The survey extended the known altitudinal range of 6 species endemic to the Wet Tropics to well below their previously recognised limits. ❐ *Vertebrate fauna, Cannabullen Plateau, rainforest, survey, Queensland, Australia.*

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Although reasonable information now exists regarding the regional distributions of most Wet Tropics vertebrates, there is a paucity of detailed local-scale surveys reported in the literature. Only a handful of field studies have published detailed descriptions of the vertebrate assemblages occurring in a specific area within the Wet Tropics (Gill, 1970; Winter et al., 1992; Kutt et al., 1995a,b; Williams et al., 1993; Williams & Marsh, 1998). Instead, most published work has been based on a synthesis of existing information, mainly unpublished, gathered by many researchers over many years (e.g. Kikkawa, 1982; Winter et al., 1984; Winter, 1988; papers in Nix & Switzer, 1991; McDonald, 1992; Covacevich & McDonald, 1993; Werren, 1993; Williams et al., 1996; Williams, 1997; Winter, 1997). Such examinations provide valuable insights, however, most of the primary survey work on which these broad-scale studies are based have concentrated on either the upland rainforests (above 600m) or the lowland coastal rainforest (below 100m). Few studies have been undertaken in the mid-elevation rainforest (200-600m), largely as a consequence of the relative inaccessibility of the forests and the steep terrain in much of this zone (McDonald, 1992; Williams et al., 1996).

In a review on vertebrate distributions and biodiversity in the Wet Tropics, Williams et al. (1996) concluded that one of the most important environmental gradients in the region was altitude, and identified mid-altitudes as being the poorest surveyed areas. The lower altitudinal tolerances of many Wet Tropics species are uncertain due to the lack of distributional data at mid-elevations. Fauna surveys within this altitudinal range are important, since they illuminate the changes occurring across the altitudinal gradient. Many of the regionally-endemic species are upland species and accurate information about their altitudinal limits is crucial when interpreting patterns of biogeography. Furthermore, the altitudinal gradient islinked tightly to the understanding of patterns of biodiversity in the region, especially the influences of historical rainforest contractions during the Pleistocene (Williams, 1997; Williams & Pearson, 1997; Winter, 1997; Williams & Hero, 1998).

More than 70% of rainforest in the Wet Tropics has been altered by logging, with the relatively flat, or gently sloping ground being most affected (Winter et al., 1987). Consequently, most of the regional data on vertebrate distributions originates from forests which have been subjected to selective logging. Selective logging changes the physical structure of the forest (Winter et al., 1987) which in turn influences the composition of the vertebrate community (Pahl et al., 1988; Laurance & Laurance, 1996; Williams & Marsh, 1998; Williams et al., 1996). As most of the undisturbed rainforest remaining in the region lies on the rugged escarpments within the mid-altitudinal range, surveys of these areas will provide important information on both undisturbed and mid-altitudinal faunal assemblages.

This paper reports on a fauna survey conducted at the Cannabullen Section of Tully Gorge National Park on the southern slopes of the Atherton Tableland in N Queensland. The section of the national park is comprised largely of Cannabullen Plateau, a mid-elevation (420-480m ASL) unlogged rainforest. The plateau has escaped logging and the associated fragmentation by roads and snig-tracks because deep gorges and rugged terrain surround it. Few fauna surveys have been undertaken in the national parks of the Wet Tropics and none in the vicinity of Cannabullen. As such, this study represents an important addition to the knowledge of vertebrate fauna within the national parks estate. Additionally, the study adds to our knowledge of the vertebrate fauna in mid-elevation unlogged rainforest in the Australian Wet Tropics.

METHODS

Cannabullen Plateau is situated on the southern escarpment of the Atherton Tableland, approximately 15km SE of Ravenshoe (17°42'S 145°37'E). The plateau is relatively flat and consists of approximately 12,500ha of rainforest (mesophyll vine forest) on basaltic soils.

A team of 6 biologists surveyed the vertebrate fauna of the plateau and adjacent Cochable Ck over 20 days in November 1993. Sampling was conducted at 3 primary sites on the plateau: Site P1 near the southern end, Site P2 in the centre and Site P3 on the northern end of the plateau. Two secondary sites were surveyed on Cochable Ck which defines the western and southern edge of the plateau. Site C1 (third order stream) was situated below the camp at the southern end of the plateau while Site C2 (second order stream) was in the headwaters of Cochable Creek at the northern end of the plateau. Table 1 summarises the exact site localities, altitudes and habitat descriptions for each site. Cannabullen Creek in the gorge on the east of the plateau was only visited once due to the relative inaccessibility of that gorge.

Each plateau sites was sampled using a standardised combination of methods, including mammal trapping, active searches, spotlighting and bird transects. Sampling at the two creek sites consisted of bat mist-netting and frog transects. In addition to the standardised sampling all miscellaneous records were recorded and miscellaneous searches were conducted in any areas or microhabitats not represented in the primary sites, including several nights of bat mist-netting (two nets) at each of the creek sites. Voucher specimens were taken for species where there was any doubt about identification and lodged with the Queensland Museum (specimen numbers QMJ59879-QMJ59901).

Five trapping grids were established at each site (P1, P2 & P3) with at least 200m between adjacent grids. Each grid consisted of 20 small mammal traps (Elliott type A) and 2 wire cage traps (Mascot Wire, 30×30×60cm, folding, treadle type). The traps were set in two parallel lines 10m apart with 10 Elliot traps (5m apart) along each line. The two cage traps were placed between the lines at the second trap in from each end. Traps were baited with a mixture of rolled oats and vanilla essence, and checked and re-baited each morning for four nights at each site. Therefore, a total of 440 trap-nights were conducted at each of the three sites on the plateau. All animals caught were identified, tagged with individually numbered monel metal ears tags, sexed, weighed and released at the trap site.

Standardised spotlighting transects were conducted to sample all nocturnal vertebrate fauna. A single spotlighting transect approximately 1km long was established at each site. Each transect was sampled on three nights. Spotlighting was standardised to reduce biases in a technique which has intrinsic high variability (using methods described in Williams, 1995). Spotlighting was conducted between 1900h and 2400h. We used two 30W hand-held spotlights and binoculars to identify animals on all transects. For each observation of an animal the time, species, position along the transect, estimated distance from the transect, estimated height and the method of detection (call, sight, heard movement) were recorded.

Bird surveys utilising both sightings and calls were conducted over the same transects as the spotlighting transect. Each transect was surveyed three times by the same two people. Each census took between 90 and 120min and was undertaken

TABLE 1. Site localities and habitat descriptions. Vegetation types follow Tracey & Webb (1975).

Site	AMG	Altitude	Habitat
C1	352400 / 8042200	340	Third order stream; wide canopy break (30m), large boulders, some bedrock, riffles, waterfalls and large pools
C2	351900 / 8043600	410	Second order stream, narrow canopy break (5m), small pools, riffles, small boulders, number of small first order gullies
P1	352600 / 8042300	420	Mixed mesophyll vine forest (type 1a/2a) – heavily cyclone disturbed; dense understorey
P2	352600 / 8042900	460	Mixed mesophyll vine forest (type 1a/2a) – less cyclone damage; patchy dense understorey
P3	352300 / 8043500	490	Mixed mesophyll vine forest (type 1a/2a) – little cyclone damage; open understorey

in the 2h following dawn. Numbers of individual birds were not recorded.

Surveys for stream-dwelling frogs were carried out along the creek at Sites C1 and C2. Each transect consisted of a 200m length of creek and was surveyed three times by two people using spotlights and head torches between 1700h and 2400h. The numbers of individuals were recorded on each survey, except when a large breeding chorus was encountered and abundances were estimated.

Active searches for herpetofauna consisted of two people walking along the standard transects (approximately 10m wide) at each site and recording all individuals that were visible and also by searching actively under logs, bark, leaf litter etc. The 1km transect at each site was surveyed three times, on different days. Searches were not carried out in rain or during times of heavy cloud cover.

RESULTS

A total of 96 species of vertebrates were recorded during the survey comprising 12 mammals, 52 birds, 22 reptiles and 10 frogs (Table 2; see Appendix for relative abundances at each site and current conservation status of each species). Species richness was relatively uniform over the plateau with only minor differences in assemblage structure between the three primary plateau sites (Table 2). The cumulative species curve suggests that the total number of species was plateauing after surveying the 5 sites (Fig. 1). Bootstrap estimates of total species richness suggests that the study area contains approximately 109 species (Fig. 1). Therefore, we estimate that the survey recorded 88% of the total species richness.

Twenty-nine of the observed species or 30% of the total are endemic to the Wet Tropics region. Nearly 41% of these species (39 species) are considered to be very important species (VIS) with respect to the conservation of the world heritage values of the region (Williams et al., 1996; see Table 4 for VIS definition). Eight of these species are currently recognised as being rare, vulnerable or endangered under the Queensland Nature (Wildlife) Regulation (1994) (Table 2).

Five species of birds (Tooth-billed Bowerbird; Bowers Shrike-thrush; Australian Fernwren; Bridled Honeyeater; Atherton Scrubwren) and one gecko (*Carphodactylus laevis*) were observed well below the altitudinal limits given in Nix & Switzer (1991). All of these 6 species were thought to be restricted to above 600m ASL using recorded point locality data (Crome & Nix, 1991; Covacevich & McDonald, 1991). However, broad distributional data suggest that four of the bird species are known to occur down to 450m (Gill, 1970) and *C. laevis* is known to occur down to 300m (Covacevich & McDonald, 1993). Unfortunately, neither of these papers report point localities. Other noteworthy records on Cannabullen Plateau were the relatively high numbers of Musky Rat-kangaroos, Cassowaries and rare and/or endangered frogs. Two species of declining frogs (Richards et al., 1993) (*Litoria nannotis, L. rheocola*) were observed in reasonable numbers (Appendix), as were two rare microhylid frogs (*Cophixalus infacetus, Sphenophryne robusta*).

Although the vertebrate assemblages were relatively uniform throughout the plateau there were some differences between sites that are of ecological interest. Two species of mammals (*Melomys cervinipes, Uromys caudimaculatus*) and one reptile (*Saproscincus basilisicus*) were more abundant in the southern parts of the plateau, while 3 species of skinks were more abundant in the northern sites (*Carlia rubrigularis*, *Lampropholis coggeri*, *Gnypetoscincus queenslandiae*). The frog assemblages at the two creek sites (Cochable Ck) were very different, reflecting differences in the microhabitats at each site. Site C1 was characterised by large pools with high flow and rocky substratum, and supported high numbers of stream dwelling hylid frogs (*Litoria genimaculata*, *L. lesueuri*, *L. rheocola*, *L. nannotis*) (Appendix). Site C2 was a smaller creek with small pools, fewer boulders and a more closed canopy. There were only a few individuals of each species of stream-dwelling hylid present at Site C2, however, there was a more diverse complement of microhylid frogs (*Cophixalus infacetus*, *Sphenophryne robusta*) than at C1. Water dragons (*Physignathous lesueuri*) were also much more common in the southern, larger section of the creek (Site C1). It was of interest that all sites on the plateau had sympatric populations of both Lewin's Honey-eaters and Yellow-spotted Honeyeaters, two species that are usually thought to be altitudinally allopatric (Longmore, 1991).

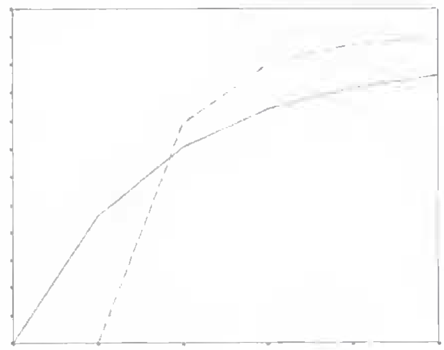

FIG. 1. Mean cumulative species curve for survey sites based on Monte-Carlo simulations of cumulative species counts over the five sites (solid line) and bootstrap estimate of species richness (dashed line). Both estimates are constructed using the mean of 1000 randomised runs using the program 'Species Diversity & Richness' (Henderson & Seaby 1997).

DISCUSSION

The species richness of terrestrial vertebrates observed on Cannabullen Plateau may seem low considering that it lies within a region containing approximately 700 species (Williams et al., 1996). However, the plateau is very flat and the vegetation is relatively uniform. A diversity of almost 100 species of vertebrates is high given the lack of coarse habitat heterogeneity. For example, there are no large waterbodies, swamps, rocky outcrops or patches of non-rainforest vegetation which often increase dramatically the number of species in a given area (Williams et al., 1996).

Since Cannabullen Plateau is entirely rainforest and sufficiently distant from other vegetation types so as not to be influenced by non-rainforest species assemblages, this survey provides an estimate of true local-scale species richness within the rainforest. The cumulative species curve and bootstrap estimate of total species richness both suggest that the survey did record a large portion of the species present. Local-scale species richness is affected by a number of processes including regional species richness, habitat heterogeneity and the movements of individuals from adjoining habitats (mass-effect) (Shmida & Wilson, 1985; Ricklefs & Schluter, 1993). Due to the highly fragmented and often narrow shape of rainforests within the region (Williams & Pearson, 1997), it is difficult to obtain estimates of rainforest species richness which are not influenced by adjoining habitats or the strong effects of coarse scale habitat heterogeneity (Williams et al., 1996; Williams & Marsh, 1998). This study provides baseline reliable estimates (Fig. 1) of both local and habitat species richness of mid-altitude rainforest without the confounding effects due to coarse habitat heterogeneity and mass-effects from adjoining habitats.

Although local species richness does not vary greatly between the three primary sites on the plateau, there are some subtle, but ecologically significant, differences in the relative abundances of several species (see Appendix). These differences are probably the result of changes in the vegetation structure between the southern and northern ends of the plateau. It is well known that vegetation structure influences the assemblage structure of vertebrates (Southwood, 1996). The southern end of the plateau has been disturbed heavily by cyclones, whereas the northern end is much more protected and has suffered considerably less damage. This has resulted in a gradient in vegetation structure from the southern end which has a more open canopy, very dense middle layer and a dense lower shrub layer to a more closed canopy and much more open shrub and ground layers in the northern end of the plateau. Although these changes are patchy and subtle compared to the overall vegetation structure, they are seemingly significant enough to have influenced the abundances of several

TABLE 2. Summary of species richness at each site for each taxonomic class including: total number of species, number of regionally-endemic species, number of rare, vulnerable and endangered species listed under the Nature Conservation (Wildlife) Regulation (1994) and the number of species of conservation significance to the region (Very Important Species (VIS) are either listed rare, vulnerable or endangered and/or are regionally-endemic species or subspecies — after Williams et al., 1996). n/a = not applicable (no standardised bird surveys at these sites).

	Sites					Total
	C1	C2	P1	P2	P3	
Mammals						
Total	4	3	10	10	7	12
Rare, vulnerable & endangered	-	-	1	-	-	1
Regional endemics	1	-	2	1	1	2
VIS	1	2	3	2	1	3
Birds						
Total	n/a	n/a	38	41	42	52
Rare, vulnerable & endangered	n/a	n/a	1	-	1	1
Regional endemics	n/a	n/a	8	9	8	11
VIS	n/a	n/a	15	16	16	19
Reptiles						
Total	11	9	14	7	11	22
Rare, vulnerable & endangered	-	-	1	-	1	1
Regional endemics	5	4	8	6	8	9
VIS	5	4	8	6	8	9
Amphibians						
Total	4	9	5	2	-	10
Rare, vulnerable & endangered	3	5	2	1	-	5
Regional endemics	2	7	4	1	-	7
VIS	3	8	4	1	-	8
Total number of species	20	21	67	60	60	96

species including some of the small mammals (*Melomys cervinipes, Uromys caudimaculatus*) and skinks (*Carlia rubrigularis, Lampropholis coggeri, Saproscincus basilisicus, Gnypetoscincus queenslandiae*) (Table 2, Appendix). Similarly, there are large differences in the vertebrate assemblages between Sites C1 and C2 due to the large differences in the habitat structure of the creek. The stream-dwelling hylid frogs, water dragons (*Physignathus lesueurii*) and water skinks (*Eulamprus quoyii*) are much more common in the rocky, higher flow habitat at C1 while microhylids are both more diverse and more abundant in the smaller headwaters at site C2 and at site P1. The known microhabitat preferences (Cogger, 1996) of these fauna reflect the pattern of distribution observed in this survey. For example, amongst the frogs detected, stream- dwelling hylids typically prefer swift-flowing rocky streams, while the microhylid species are usually associated with leaves and other debris on the rainforest floor, especially in moist areas (McDonald, 1992). Estimates of local abundances of birds were not accounted for in this study and, therefore, comparisons of the relative abundances of birds at each site could not be made.

The records of regionally endemic species at considerably lower altitudes than previously recognised are important for interpreting biogeographic patterns across the region. Analyses utilising climatic models (e.g. Nix & Switzer, 1991) are reliant on a relatively small number of records often biased towards areas of easy access. Eight regionally endemic bird species were previously recognised as being restricted to above 600m (Crome & Nix, 1991), yet this survey recorded five of these eight species at just over 400m. Our data agree with the general statements on bird distributions by Gill (1970) that many of the upland endemics are found at altitudes as low as 340m. The incorporation of these data would influence predicted climatic profiles and distributions for several species and may change the interpretation of the effects that historical climate fluctuations have had on these species. The lack of comprehensive, region-wide point data remains one of the most significant problems in analyses of vertebrate distributions in the region, especially in areas of difficult access.

Cannabullen Plateau contains many vertebrate species of conservation significance, with 41% of species having a Very-Important-Species (VIS) rating (Williams et al., 1996) and 30% of species being restricted to the Wet Tropics region (Table 2). In particular, there were good populations of two species of declining frogs (*Litoria nannotis, L. rheocola*). Upland areas above 600m ASL have always been considered to be the most significant areas for regionally-endemic vertebrates in the Wet Tropics (Nix & Switzer, 1991). The results of this survey suggest that this significant zone should extend down to at least 400m ASL, similar to the scheme used in Winter et al. (1984). However, the plateau is unusual in that there is a considerable flat area of rainforest on highly fertile basalt at mid-altitudes. There is evidence that foliar nutrients are higher on the more fertile basaltic soils and that this produces differences in the structure of the faunal assemblages between basaltic and granitic soils (J. Kanowski, unpubl. data). Other surveys at mid-altitudes are needed to confirm the generality of these findings. The generality of these results are further limited by being based on a single, albeit comprehensive, survey. Since this national park contains such a large proportion of species of significant conservation value within the Wet Tropics, it represents a significant resource in the management and protection of the biodiversity and wilderness values of the region. The Cannabullen Plateau Section of Tully Gorge National Park, and the adjacent Elizabeth Grant Falls Section are relatively inaccessible at present because of the natural protection afforded by the surrounding topography and perhaps it would be best if this isolation were to be actively maintained.

ACKNOWLEDGEMENTS

We thank Steve Comport, Jeff Middleton and Stephanie White for their endurance and hard work during the many trials involved in this expedition. We are indebted to the Wet Tropics Management Authority, Australian Geographic, and the Department of Tropical Environmental Studies and Geography (James Cook University) for their generous funding. Thanks are extended to the Queensland Departments of Environment and Natural Resources for permission to undertake the survey. Many thanks to John Winter and Alex Kutt for their suggestions and comments on the manuscript.

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APPENDIX

List of species recorded during survey; conservation status defined by Nature Conservation (Wildlife) Regulation (1994) (NCR), regional endemics (END) and very important species (VIS) as defined by Williams et al. (1996) as being of significant conservation importance are indicated; overall relative abundance index at Cannabullen Plateau and abundances at each of the sites. Abundances are the total number of individuals observed at each site except for birds where the number represents the number of transects at each site that each species was recorded (max. 3). Abundance index is an estimate of relative abundance for each species on Cannabullen Plateau based on the combination of all methods and sites (Abund. Index): 1 = rare, only observed once or twice during entire survey; 2 = uncommon, observed several times, usually on several transects and sometimes at more than one site; 3 = common, observed on most transects at multiple sites; 4 = abundant, observed on most transects at most sites and usually with multiple numbers of individuals.

Family	Species	Common	NCR	END	VIS	Abund. Index	Sites				
							C1	C2	P1	P2	P3
Dasyuridae	*Antechinus flavipes*	Yellow-footed Antechinus			*	2		1	1	1	
Peramelidae	*Perameles nasuta*	Long-nosed Bandicoot				3			5	9	5
Petauridae	*Dactylopsila trivirgata*	Striped Possum				1			1		
Pseudocheiridae	*Pseudocheirops archeri*	Green Ringtail Possum	R	*	*	1			1		
Potoroidae	*Hypsiprymnodon moschatus*	Musky Rat-kangaroo		*	*	4	1		12	6	11
Macropodidae	*Thylogale stigmatica*	Red-legged Pademelon				3			2	5	7
Pteropodidae	*Nyctimene robinsoni*	Queensland Tube-nosed Bat				3	1		3	3	3

Family	Species	Common	NCR	END	VIS	Abund. Index	Sites				
							C1	C2	P1	P2	P3
Muridae	*Hydromys chrysogaster*	Water Rat				1	1	1			
Muridae	*Melomys cervinipes*	Fawn-footed Melomys				2			7	2	
Muridae	*Rattus fuscipes*	Bush Rat				4			19	13	21
Muridae	*Uromys caudimaculatus*	Giant White-tailed Rat				3		1	4	2	2
Suidae	*Sus scrofa*	Feral Pig				2	1			2	2
Casuariidae	*Casuaris casuaris*	Southern Cassowary	E		*	2			1		1
Megapodiidae	*Alecturi lathami*	Australian Brush Turkey				2				2	2
Megapodiidae	*Megapodius reinwardt*	Orange-footed Scrubfowl				3			3	3	3
Rallidae	*Rallina tricolor*	Red-necked Crake				1				1	
Columbidae	*Chalcophaps indica*	Emerald Dove				1				1	
Columbidae	*Lopholaimus antarcticus*	Topknot Pigeon				2	3		1		
Columbidae	*Macropygia amboinensis*	Brown Cuckoo-Dove				3			3	3	3
Columbidae	*Ptilinopus magnificus*	Wompoo Fruit-Dove				3			3	3	3
Columbidae	*Ptilinopus regina*	Rose-crowned Fruit-Dove				2			1	1	1
Columbidae	*Ptilinopus superbus*	Superb Fruit-Dove				3			3	3	3
Cacatuidae	*Cacatua galerita*	Sulphur-crested Cockatoo				3			3	2	3
Psittacidae	*Alisteris scapularis*	Australian King Parrot			*	3			2	1	2
Psittacidae	*Trichoglossus chlorolepidotus*	Scaly-breasted Lorikeet				3			2	3	2
Psittacidae	*Trichoglossus haematodus*	Rainbow Lorikeet				3			3	2	3
Cuculidae	*Cacomantis flabelliformis*	Fan-tailed Cuckoo				1					1
Cuculidae	*Eudynamys scolopacea*	Common Koel				2			1		
Tytonidae	*Tyto multipunctata*	Lesser Sooty Owl		*	*	1			1		
Strigidae	*Ninox novaseelandiae*	Southern Boobook			*	2			2	1	1
Alcedinidae	Alcedo pusilla	Little Kingfisher				1					1
Halcyonidae	*Dacelo novaeguineae*	Laughing Kookaburra				2			3	1	1
Pittidae	*Pitta versicolor*	Noisy Pitta				2			1	1	1
Campephagidae	*Coracina lineata*	Barred Cuckoo-Shrike				2					3
Campephagidae	*Lalage leucomela*	Varied Triller				3			2	3	3
Orthonychidae	*Orthonyx spaldingii*	Chowchilla		*	*	3			2	2	3
Cinclosomatidae	*Psophodes olivaceus*	Eastern Whipbird			*	3			3	2	3
Pardalotidae	*Gerygone mouki*	Brown Gerygone			*	4			3	3	2
Pardalotidae	*Oreoscopus gutteralis*	Fernwren		*	*	1				1	
Pardalotidae	*Sericornis keri*	Atherton Scrubwren		*	*	1				1	1
Pardalotidae	*Sericornis magnirostris*	Large-billed Scrubwren				2			1	2	3
Dicruridae	*Arses kaupi*	Pied Monarch		*	*	1			1		
Dicruridae	*Machaerirhynchus flaviventer*	Yellow-breasted Boatbill			*	*				1	1
Dicruridae	*Monarcha melanopsis*	Black-faced Monarch				2			*		2
Dicruridae	*Monarcha trivirgatus*	Spectacled Monarch				3			2	2	2
Petroicidae	*Heteromyias albispecularis*	Grey-headed Robin		*	*	4			3	3	3

Family	Species	Common	NCR	END	VIS	Abund. Index	Sites				
							C1	C2	P1	P2	P3
Petroicidae	*Tregellasia capito*	Pale-yellow Robin			*	3			1	3	1
Pachycephalidae	*Colluricincla boweri*	Bowers Shrike-Thrush		*	*	2				1	2
Pachycephalidae	*Colluricincla megarhyncha*	Little Shrike-Thrush				4			3	3	3
Pachycephalidae	*Pachycephala pectoralis*	Golden Whistler				1				1	1
Pachycephalidae	*Pachycephala simplex*	Grey Whistler				3			1	2	3
Climacteridae	*Cormobates leucophaeus*	White-throated Treecreeper				3			2	2	3
Dicaeidae	*Dicaeum hirundinaceum*	Mistletoebird				1				1	
Zosteropidae	*Zosterops lateralis*	Silvereye				1					1
Meliphagidae	*Lichenostomus frenatus*	Bridled Honeyeater		*	*	4	1		3	3	3
Meliphagidae	*Meliphaga lewinii*	Lewin's Honeyeater				3			2	3	3
Meliphagidae	*Meliphaga notata*	Yellow-spotted Honeyeater				3			2	3	2
Meliphagidae	*Myzomela obscura*	Dusky Honeyeater				2			1	1	1
Meliphagidae	*Xanthotis macleayana*	Macleay's Honeyeater		*	*	3			2	3	3
Sturnidae	*Aplonis metallica*	Metallic starling				2	10+				
Artamidae	*Strepera graculina*	Pied Currawong				2			2	1	
Ptilonorhynchidae	*Ailuroedus melanotis*	Spotted Catbird			*	3			2	3	3
Ptilonorhynchidae	*Scenopoeetes dentirostris*	Tooth-billed Bowerbird		*	*	3			1	3	2
Paradisaeidae	*Ptiloris victoriae*	Victoria's Riflebird		*	*	3			3	3	3
Chelidae	*Elseya latisternum*	Sawshell Tortoise				3	3	3			
Gekkonidae	*Carphodactylus laevis*	Chameleon Gecko		*	*	1			1		
Gekkonidae	*Saltuarius cornutus*	Northern Leaf-tailed Gecko		*	*	1				1	1
Scincidae	*Carlia rubrigularis*	Northern Red-throated Skink		*	*	4	6	3	3	11	15
Scincidae	*Egernia frerei*	Major Skink				1			1		
Scincidae	*Eulamprus quoyii*	Eastern Water Skink				3	2	2			
Scincidae	*Eulamprus tigrinus*		R	*	*	2			1		3
Scincidae	*Gnypetoscincus queenslandiae*	Prickly Forest Skink		*	*	4	1	1	3	8	27
Scincidae	*Lampropholis coggeri*			*	*	3	1		5	5	12
Scincidae	*Saproscincus basiliscus*			*	*	4	1	1	16	18	10
Scincidae	*Saproscincus tetradactyla*	Four-toed Litter Skink		*	*	3	1	1	3	1	5
Agamidae	*Hypsilurus boydii*	Boyd's Forest Dragon		*	*	1			1		1
Agamidae	*Physignathus lesueurii*	Eastern Water Dragon				4	31	4			
Varanidae	*Varanus scalaris*					1			1		1
Typhlopidae	*Ramphotyphlops polygrammicus*					1			1		
Boidae	*Morelia amethestina*	Amethystine Python				1			2		
Boidae	*Morelia spilota*	Carpet Python				2			1		2
Colubridae	*Dendrelaphis calligastra*	Northern Tree Snake				1			1		
Colubridae	*Dendrolaphis punctulata*	Common Tree Snake				2	1	1			

Family	Species	Common	NCR	END	VIS	Abund. Index	Sites				
							C1	C2	P1	P2	P3
Colubridae	*Tropidonophis mairii*	Keelback				1	1				
Elapidae	*Pseudechis porphyriacus*	Red-bellied Black Snake				2	1	1	1		
Elapidae	*Rhinoplocephalus nigrescens*	Eastern Smalleyed Snake				2				1	1
Bufonidae	*Bufo marinus*	Cane Toad				2				3	
Hylidae	*Litoria genimaculata*	Green-eyed Treefrog	R		*	3	31	1			
Hylidae	*Litoria lesueuri*	Stony-creek Frog				3	23	1	2		
Hylidae	*Litoria nannotis*	Waterfall Frog	E	*	*	3	16	5			
Hylidae	*Litoria rheocola*	Common Mistfrog	E	*	*	3	50+	2			
Microhylidae	*Cophixalus infacetus*	Buzzing Nursery-Frog	R	*	*	2		4	1		
Microhylidae	*Cophixalus ornatus*	Common Nursery-Frog		*	*	3		2	2		
Microhylidae	*Sphenophryne pluvialis*	White-browed Chirper		*	*	2		2	1		
Microhylidae	*Sphenophryne robusta*	Pealing Chirper	R	*	*	2		1	1	1	
Myobatrachidae	*Mixophyes schevilli*	Northern Barred-Frog		*	*	1		1			